

A NEW SPECIES OF *DASYHELEA* KIEFFER  
(DIPTERA: CERATOPOGONIDAE) AND NEW RECORDS OF BITING  
MIDGES FROM THE STATE OF SAN LUIS POTOSI, MEXICO

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*Abstract.*—Four previously described species of Ceratopogonidae: *Lasiohelea anitae* (Huerta and Ibáñez-Bernal), *Forcipomyia* (*Thyridomyia*) *nodosa* Saunders, *Dasyhelea scissurae* Macfie, and *Culicoides* (*Haematomyidium*) *paraensis* (Goeldi), are recorded for the first time in the State of San Luis Potosi, Mexico. In addition, descriptions and illustrations of *Dasyhelea huasteca*, **new species**, and the female of *Lasiohelea anitae* (Huerta and Ibáñez-Bernal) are presented.

*Resumen.*—Se registran por primera vez para el estado de San Luis Potosí, México, cuatro especies de Ceratopogonidae previamente descritas: *Lasiohelea anitae* (Huerta e Ibáñez-Bernal), *Forcipomyia* (*Thyridomyia*) *nodosa* Saunders, *Dasyhelea scissurae* Macfie y *Culicoides* (*Haematomyidium*) *paraensis* (Goeldi). Adicionalmente, se presentan las descripciones e ilustraciones de *Dasyhelea huasteca nueva especie* y de la hembra de *Lasiohelea anitae* (Huerta e Ibáñez-Bernal).

*Key Words:* Diptera, Ceratopogonidae, *Lasiohelea*, *Forcipomyia*, *Dasyhelea*, *Culicoides*, Mexico, San Luis Potosi, new species

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The Ceratopogonidae remain poorly studied in many areas of Mexico, for example, the Mexican Plateau is a region of current interest for faunistic studies. Some states in this area, such as the states of Mexico and Aguascalientes, have no ceratopogonid species recorded at present. Near these states is San Luis Potosi, with nine species of biting midges previously recorded: *Forcipomyia incubans* (Macfie), *F. mexicana* Wirth, *Culicoides blantoni* Vargas and Wirth, *C. eadsi* Wirth and Blanton, *C. neopulicaris* Wirth, *Stilobezzia coquilletti* Kieffer, *Paryphoconus anomalicornis* Kieffer, *P. maya* Spinelli and Wirth, and *Stenoxenus johnsoni* Coquillett.

We recently studied some specimens of

*Lasiohelea* Kieffer, *Forcipomyia* Meigen, *Dasyhelea* Kieffer, and *Culicoides* Latreille, collected near the towns of San Antonio and San Martin Totolteo in San Luis Potosi, and found new geographical records of four species, as well as the an undescribed species of *Dasyhelea* and the previously unknown female of *Lasiohelea anitae* (Huerta and Ibáñez-Bernal).

We follow Yu and Wirth (1997) and consider *Lasiohelea* as a genus instead of a subgenus of *Forcipomyia*. We used the slide mounting method suggested by Borkent and Bissett (1990), and the morphological terms of Downes and Wirth (1981). All the specimens are deposited in the Collection of Arthropods with Medical Impor-

tance of the Instituto Nacional de Diagnóstico y Referencia Epidemiológicos (INDRE), Secretaría de Salud, Mexico.

*Lasiohelea anitae* (Huerta and Ibáñez-Bernal)  
(Figs. 1–8)

*Forcipomyia (Lasiohelea) anitae* Huerta and Ibáñez-Bernal 1996: 350, figs. (♂, Mexico, Chiapas).

Female description.—*Head*: Eyes bare, mesally with ocular margins in contact, but with marginal facets separated at narrowest distance by one to one and a half facet diameters (Fig. 3). Flagellum brown (Fig. 1); lengths of flagellomeres ( $\mu\text{m}$ ): 30-20-22-22-22-23-24-27-63-68-69-70-98; antennal ratio (AR): 1.76 (1.70–1.82;  $n = 3$ ); basal flagellomeres semispherical, flagellomere 8 with 6–7 basiconic sensilla. Palpus (Fig. 2) with lengths of segments ( $\mu\text{m}$ ): 0.3-42-22-35; palpal ratio (PR): 1.1 (1.0–1.3,  $n = 3$ ); third segment swollen at midlength, with a large oval pit, containing several small, irregularly arranged sensilla capitata. Mandible (Fig. 4) with 30–32 small teeth; mandible length ( $\mu\text{m}$ ): 108.5, width ( $\mu\text{m}$ ): 17.6. Cibarial armature with 15 or 16 teeth in single row (Fig. 5); each tooth with basal apodeme, each about double tooth length.

*Thorax*: Scutum, scutellum brown; legs uniformly pale yellowish. Tarsal ratios of foreleg (I), midleg (II), hindleg (III) (TR): I: 2.38 (2.36–2.42), II: 2.0 (2.0), III: 2.0 (2.0–2.1) ( $n = 3$ ); hind tibial comb with 7 spines, one near spur longest. Wing (Fig. 6) with radial cells coalesced, slitlike; wing length: 0.83 mm (0.82–0.85;  $n = 3$ ), width: 0.34 mm (0.32–0.35;  $n = 3$ ), costal ratio (CR): 0.59 (0.59–0.60;  $n = 3$ ). Halter pale.

*Abdomen*: Brown. Genitalia (Fig. 8) with 3 small lobes arising at different level from posterior base of genital fork; spermatheca (Fig. 7) partially collapsed in examined material.

Distribution.—Mexico (Chiapas, San Luis Potosi).

Specimens examined.—3 ♀, 1 ♂. Mex-

ico: San Luis Potosi, San Antonio, El Puente, April 23, 1997, Malaise trap, Paz-Rodríguez, R. & Pérez-Rentería, C., cols.

Comments.—The female of this species can be associated with the male by the number and arrangement of the cibarial teeth, the form of the palpus and the frontal sclerite, the body coloration, and the arrangement and form of the sensilla on the flagellomeres. The single male collected from San Luis Potosi was compared with the type specimens previously described by Huerta and Ibáñez-Bernal (1996).

Unfortunately, the descriptions of females of most American species of *Lasiohelea* do not include many important characteristics useful for their separation, such as the number of cibarial and mandibular teeth, and certain ratios, thereby making species determination very difficult. We believe it is necessary to redescribe most of the American species in order to recognize the important characteristics useful for separating these species (Yu and Wirth 1997).

*Forcipomyia (Thyridomyia) nodosa*  
Saunders  
(Fig. 9)

*Forcipomyia (Thyridomyia) nodosa* Saunders 1959: 43 (all stages, Costa Rica, figs.).

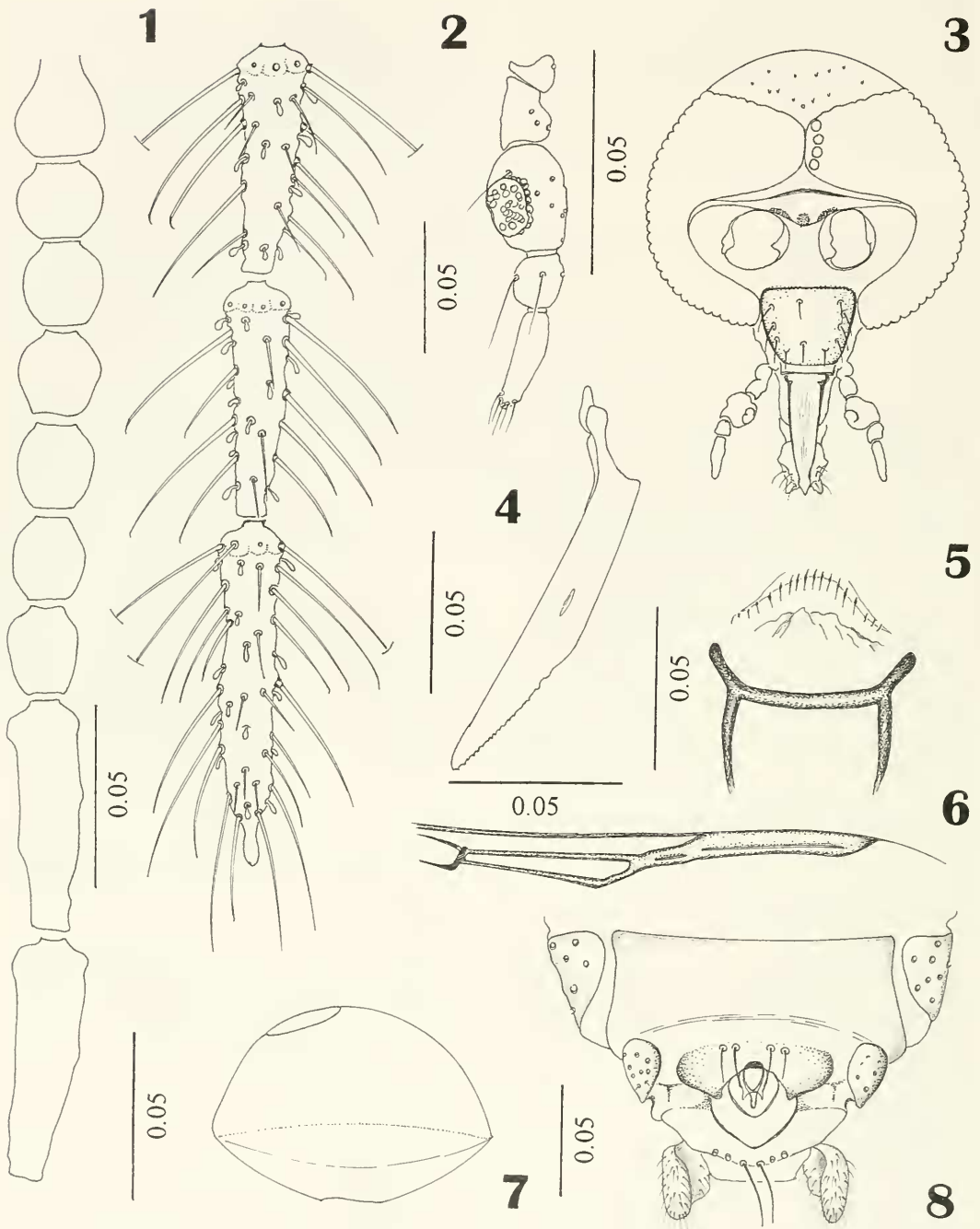
Several specimens of this species were collected in San Luis Potosi. An illustration of the male genitalia is presented in Fig. 9. Dow and Wirth (1972) gave detailed redescrptions of both sexes.

Distribution.—U.S.A.: Mexico (Baja California, Sonora, Sinaloa, San Luis Potosi); Costa Rica; Colombia.

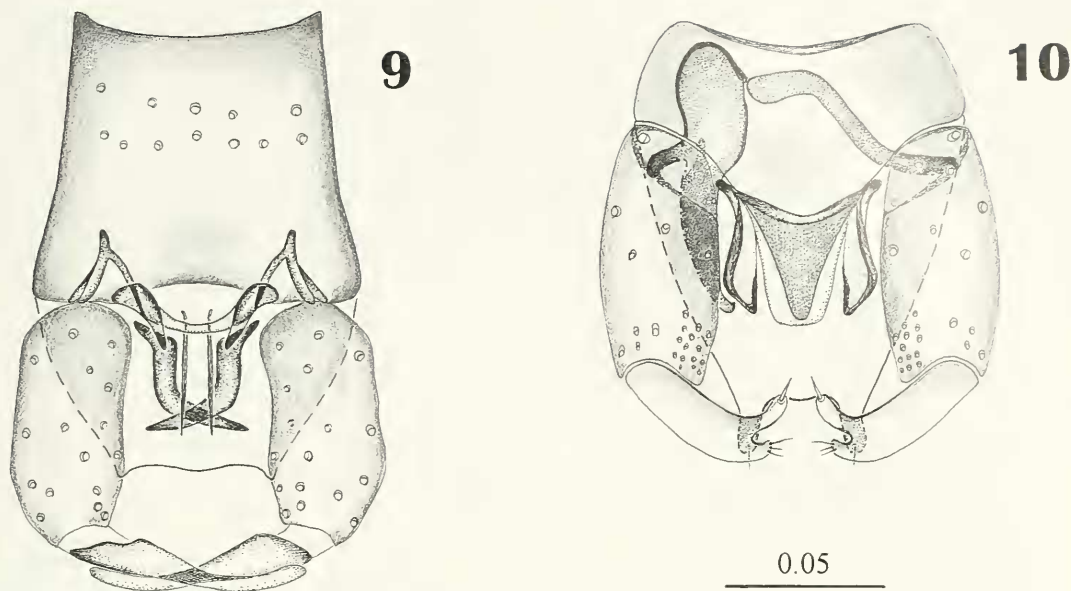
Specimens examined.—8 ♂, 6 ♀. Mexico: San Luis Potosi, San Antonio, El Puente, April 23, 1997, Malaise trap, Paz-Rodríguez, R. & Pérez-Rentería, C., cols.

*Dasyhelea scissurae* Macfie  
(Fig. 10)

*Dasyhelea scissurae* Macfie 1937: 15 (♂, Trinidad, figs.).



Figs. 1-8. *Lasiohelea anitae*, female. 1. Flagellomeres. 2. Palpus. 3. Head. 4. Mandible. 5. Cibarial armature. 6. Anterior veins of wing. 7. Spermatheca. 8. Abdomen, distal segments, in ventral view. Scale lines in millimeters.



Figs. 9–10. Male genitalia, in ventral view. 9, *Forcipomyia (Thyridomyia) nodosa*. 10, *Dasyhelea scissurata*. Scale line in millimeters.

This is the first record of this species from the state of San Luis Potosi, and only the second record from Mexico (Ibáñez-Bernal et al. 1996). We provide an illustration of the male genitalia (Fig. 10).

**Distribution.**—Mexico (San Luis Potosi, Guerrero); Costa Rica; Bermuda; Trinidad; Argentina.

**Specimens examined.**—17 ♂, 11 ♀. Mexico: San Luis Potosi, San Martin Tolteteo, April 24, 1997, Malaise trap, Paz-Rodríguez, R., Pérez-Rentería, C., cols. Seven males mounted on slides; the remaining specimens preserved in ethanol.

***Dasyhelea huasteca* Huerta and Ibáñez-Bernal, new species**  
(Figs. 11–16)

**Diagnosis.**—Small brown species, with the fifth tarsomeres dark and female cerci spatula-like.

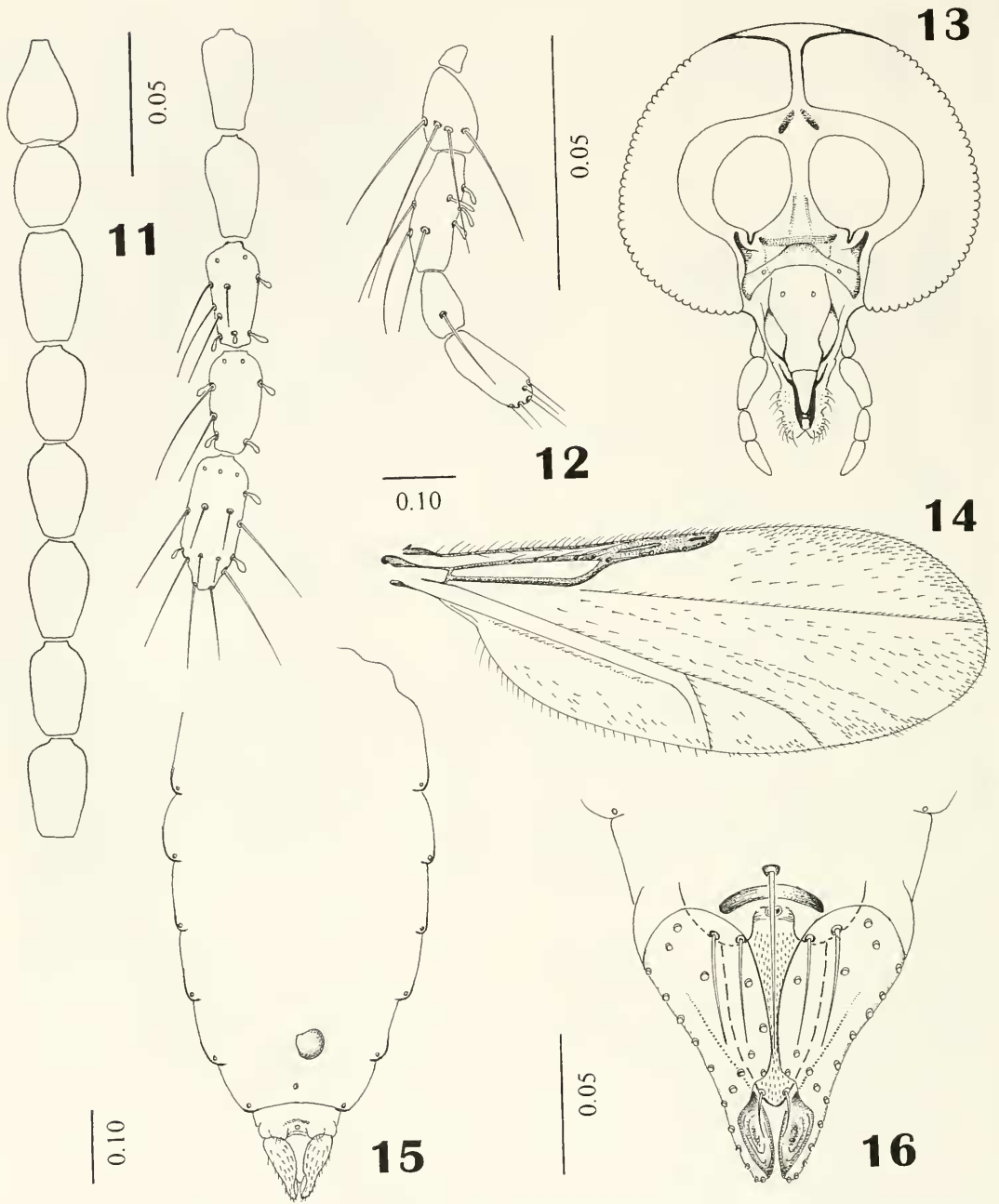
**Female.**—**Head** (Fig. 13): Dark brown. Eyes with short pubescence, separated at narrowest distance by 5  $\mu$ m. Frontal sclerite with two small, inclined, sclerotized bars. Flagellum (Fig. 11) brown; antennal ratio (AR): 0.72; with more or less cylindrical

non-reticulate flagellomeres, with lengths ( $\mu$ m): 37-30-30-32-32-35-35-35-35-35-37-37-46. Palpus (Fig. 12) yellowish; lengths of segments ( $\mu$ m): 27-42-22-35; palpal ratio (PR): 2.2; third segment with a few sensilla capitata on mid portion of mesal surface.

**Thorax:** Scutum and postscutellum dark brown; scutellum yellowish. Legs pale yellowish, apex of femora, base of tibia darkish, fifth tarsomeres dark; hind tibial comb with four spines, one nearest spur, short; hind tarsal ratio 1.9. Wing (Fig. 14) length: 0.74 mm; width: 0.31 mm. Wing membrane with macrotrichia extending from near base of vein r-m to wing margin; cell  $r_1$  narrow, nearly twice length of cell  $r_2$  closed; vein r-m oblique. Costal ratio (CR): 0.50. Halter with brown stem, white knob.

**Abdomen** (Fig. 15): Brown. Genitalia (Fig. 16) lightly sclerotized arched subgenital plate; cerci very long, with spatula-like cover on mesal sides of ventral surfaces, cercus length 98.4  $\mu$ m. Spermatheca subspherical (Fig. 15) measuring 0.04 mm by 0.031 mm, and a second rudimentary spermatheca present. Spermathecal/cercus length: 0.44.

**Male.**—Unknown.



Figs. 11–16. *Dasyhelea huasteca*, female. 11, Flagellomeres. 12, Palpus. 13, Head. 14, Wing. 15, Abdomen showing the two spermathecae, in ventral view. 16, Abdomen, distal segments, in ventral view. Scale lines in millimeters.

Types.—Holotype ♀, 1 ♀ Paratype: San Antonio, El Puente, April 23, 1997, Malaise Trap, Paz-Rodríguez, R., and Pérez-Rentería, C., cols. Both specimens deposited in the

Collection of Arthropods with Medical Importance of the Instituto Nacional de Diagnóstico and Referencia Epidemiológicos (IN-DRE).

**Etymology.**—The name *huasteca* refers to the natural region of Mexico that extends from the maritime slope of the Sierra Madre Oriental to the Gulf of Mexico, between the river Cazonas and the Tamesi basin. The region includes the southern part of the state of Tamaulipas, the northern area of the state of Veracruz, the oriental strip of the state of San Luis Potosí, in which the specimens were collected, and a small sector of the states of Puebla and Hidalgo. The region was inhabited in the past by the *huastecas*, a pre-Columbian Mexican people of the Maya-quiche group, now restricted to two small areas inside the region.

**Comments.**—Only two species of *Dasyhelea* have modified spatula-like cerci: *D. spathicerca* Wirth and *D. huasteca*. However, *D. spathicerca* differs from this new species because it has the two well developed spermathecae, wing is larger (wing length 1.11 mm), has a greater antennal ratio (0.68), the cerci are thinner and shorter, and the ratio of spermathecal length/cercus length is only 0.36.

It is very difficult to place this species in the subgenera proposed by Remm (1962, 1979) or in the species-groups proposed by Wirth (1952) and Waugh and Wirth (1976) because of the considerably modified female cerci and subgenital plate. The flagellomeres are more or less similar to other species in the *Leptobranchia* group of Waugh and Wirth (1976), but the third segment is shorter than the combination of fourth and fifth palpal segments. Therefore, we can not accurately place *D. huasteca* in any of the species-groups or subgenera proposed to date, and its true affinities are unknown.

*Culicoides (Haematomyidium) eadsi* Wirth and Blanton

*Culicoides eadsi* Wirth and Blanton 1971: 37 (♂, ♀, Texas).

This species was previously reported for this region by Wirth and Blanton (1971).

**Distribution.**—U.S.A. (Texas, Florida);

Mexico (Sonora, Nayarit, San Luis Potosí, Yucatan); Cuba.

**Specimens examined.**—1 ♀. Mexico, San Luis Potosí, San Antonio, El Puente, April 23, 1997, Malaise trap, Paz-Rodríguez, R., Pérez-Rentería, C., cols.

*Culicoides (Haematomyidium) paraensis* (Goeldi)

*Haematomyidium paraensis* Goeldi 1905: 137 (♀, Brazil).

*Culicoides undecimpunctatus* Kieffer 1917: 307 (♀, Argentina).

This is the first record of this species from the state of San Luis Potosí.

**Distribution.**—Eastern U.S.A.; Mexico; Central and South America south to Argentina; Barbados, Grenada and Trinidad in the West Indies.

**Specimen examined.**—1 ♀. Mexico, San Luis Potosí, San Antonio, El Puente, April 23, 1997, Malaise trap, Paz-Rodríguez, R., Pérez-Rentería, C., cols.

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